

**GRESHAM**

**Color Preferences in  
Heterogeneous Social Groups**

**Psychology**

**A. M.**

**1911**



UNIVERSITY OF ILLINOIS  
LIBRARY

Class

1911


Book

G86

Volume







Digitized by the Internet Archive  
in 2013

COLOR PREFERENCES IN HETEROGENEOUS SOCIAL GROUPS

BY

NINA VIVIEN GRESHAM

A. B. UNIVERSITY OF ILLINOIS, 1910

THESIS

Submitted in Partial Fulfillment of the Requirements for the

Degree of

MASTER OF ARTS

IN PSYCHOLOGY

IN

THE GRADUATE SCHOOL

OF THE

UNIVERSITY OF ILLINOIS

1911

937  
44  
210





1911  
986

UNIVERSITY OF ILLINOIS  
THE GRADUATE SCHOOL

June 3, 1961.

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

Nina Vivien Gresham

ENTITLED Color Preferences in Heterogeneous Social Groups.

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF Master of Arts in Psychology.

*A. Sutherland*  
In Charge of Major Work  
*Stephen J. Colvin*  
Head of Department

Recommendation concurred in:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

} Committee  
on  
Final Examination





## COLOR PREFERENCES IN HETEROGENEOUS SOCIAL GROUPS.

That color plays an important part in the lives of most people no one can doubt and that there are color preferences which seldom or never are consciously recognized as such, is easily shown by even a casual inquiry. Some will say, perhaps

that they care for dark colors or they may go so far as to name a definite group of colors, but in the main, very few are conscious of decided color preferences. To bring out these color preferences for a number of social groups, in a manner more controlled than mere verbal inquiry, has been the aim of this problem. Are there any racial or national differences in affective tone of colors and if so, do the national customs and conditions affect the taste of the individual? These two points have been carefully considered.

Indeed, an explanation of the fact of color preference needs to take account of associations in various fields. We think of a national color as, for instance, yellow, in China as due to a preference by the Chinese people, but it appears often that a love for some object rather than the color of the object is manifested. Thus it is unsafe to say, in the light of present evidence, that any nation has a definite color liking and the investigation of this point has been one of the most interesting parts of the problem.






















## METHODS AND MATERIALS OF THE EXPERIMENT.

A piece of neutral gray cardboard 51 X 76 1/4 cr., used as



a background, was placed on a table before the subject.

Twenty-one colors were each mounted upon cards,  $8 \frac{1}{4} \times 10 \frac{1}{5}$  cm., of the neutral gray, in order to eliminate brightness contrasts. The twenty-one cards were placed face downward in regular order before the experimenter and beyond the background. The following is a list of the colors used with their symbols:

1. Tint of red	T-R	
2. Red	R	
3. Shade of red	S-R	
4. Shade of Orange	S-O	
5. Orange	O	
6. Tint of Orange	T-O	
7. Tint of Yellow	T-Y	
8. Yellow	Y	
9. Shade of Yellow	S-Y	
10. Shade of Green	S-G	
11. Green	G	
12. Tint of Green	T-G	
13. Tint of Blue	T-B	
14. Blue	B	
15. Shade of Blue	S-B	
16. Shade of Violet	S-V	
17. Violet	V	
18. Tint of Violet	T-V	
19. Tint of Purple	T-P	
20. Purple	P	
21. Shade of Purple	S-P	





Each color in the series was compared with every other color, making a total of 210 judgments for each observer. The method of procedure was that of Titchener, as outlined in his Students' Manual, qualitative, page 92; the judgments being recorded upon cross-ruled paper and a curve made for each observer. Each color came twice in succession and hence the color that was placed on the right for one judgment was shifted to the left for the next, thus avoiding a possible space-error in the comparisons.

The object thruout the entire experiment has been to control the method as far as possible and to give each observer the undivided attention of the experimenter. Normal conditions as to the comfort of the subject were emphasized thruout and such seemingly minor details as the height of the observer's chair and its distance from the table were carefully considered. A normal physical and mental condition was sought and in no case did the observer make his judgments simply from a sense of duty, but introspections show that there was interest in the problem. A fairly uniform light was maintained thruout by means of careful curtain adjustment, and with one or two exceptions, no experiments were taken on dark or cloudy days. The observer did not close his eyes between judgments, but he was told that whenever the eyes became tired or after-images appeared the experiment would be discontinued until a normal condition was restored. This was done in a number of cases, although observers were never quick in detecting this fatigue and attention was at





times called to it only at the suggestion of the experimenter. The judgments were always waited for in absolute silence by the experimenter to avoid the effects of suggestion and as a rule, no interruptions occurred during the experiment.

#### INSTRUCTIONS TO OBSERVERS.

Certain instructions were given each subject as follows: "Associations are to be avoided and the color preferences stated on the basis of affective value of the colored papers without reference to any relation they may bear to other things. Associations, if any, are to be given in an introspective account." An immediate judgment was called for in all cases and lack of preference between two colors was always noted by the experimenter. Finally, suggestions or remarks concerning preferences or the manner of judgment, were encouraged.

In accordance with the suggestion of Titchener (19) the observers were told that the experiment was in no sense a test of aesthetic taste. "The observer must be assured", says Titchener, "that every judgment, no matter what it is, is on precisely the same level of value with every other; it is the judgment that is recorded, not the aesthetic rightness or wrongness of the judgment. The more passive and, so to speak, mechanical he can be in face of the stimuli, the better."

#### OBSERVERS.

It has not been the purpose of this experiment to take the judgments of large numbers of people, but rather to study, carefully, the color preferences of such groups of



people as could be reached from the psychological laboratory of the University of Illinois. These groups have included 13 Chinese, 7 Japanese, 10 American men, 11 American women, 10 Negro men, 5 Negro women, 6 Italian women from a settlement in the town, 10 school children and one Egyptian, one Hindu and one Phillipino, the results of the last three not being given in the charts. All of these observers have been most ready and willing to aid, many of them asking to be tested simply because of their interest in the problem. The age of all the adult observers has been between 19 and 24 years, the majority of them being University students; the age of the school children being six years.

#### CORRELATED LITERATURE.

The literature upon color discrimination and color preferences is scattered thru investigations in varied fields. The savage in his native haunts, the animal kingdom from the merest manifestation of life to the highest forms, the infant, the school child, the mentally defective and the normal adult from many nations, have all been the subject of experimentation.

Upon savage races, Rivers, (16) in his investigation at Torres Straits has probably given us the most reliable information, much of which deals with the defect of vision for certain colors (short wave-lengths). Rivers (20) states that the color vision of the Papuan is characterised by a certain degree of insensitiveness to blue and probably to green, as compared with that of Europeans. In testing with the Holmgren wools (2), no mistake was ever made with reds, but





blues and greens were constantly confused, as were also blue and violet. Rivers found that the savages tested by him showed a much finer sensibility for red than do Europeans and his later investigations confirm his earlier experiments, (20).

Investigations on the vision of natives of British New Guinea by Seligmann (20) show confusion and uncertainty in color nomenclature, particularly in regard to blue, green, indigo, violet and black.

Red is usually the first color material to be used in the beginning of civilization, yellow being second and in some localities on a par with red. Spencer and Gillen (2) found red to be the favorite color among the Australian savages. In their work among the Central Australian natives they found that red ochre has a very significant and important position. These savages have, for ages past, been accustomed to rub this substance, first over their most sacred objects and weapons; then over ordinary objects.

Machus (2) concluded, according to Havelock Ellis, that although the color vision of the uncivilized has the same range from red to violet as that of the civilized and all the colors can usually be separately distinguished, there is probably a certain dulness, a diminished energy of sensation, as regards green and blue, the shorter and more refrangible waves of the spectrum, while the colors at the other end are perceived with much greater vividness. Ellis (4) says that as a general rule, when dyes are known, bright yellow and scarlet are the favorite colors, as among the Society





Islanders. This is true not only among the savages of the Pacific but also among our own ancestors.

Miss Werner (2) found of an African Bantu tribe that they could discriminate fine differences in blue heads, but they called them all black. Only three colors were known among that tribe,--black, white and red.

Thus in all parts of the world it has been found that color discrimination, even among the lowest savages, is considerably more accurate than color nomenclature.

The study of the color sense in children is, indeed, even more difficult than in savages and many investigators have probably been led to speculation in terms of a preconceived notion. Much of the investigation with very young children, deals with color discrimination, only, perhaps in the belief that distinct color preference seldom becomes explicit until the child is of school age. Franklin (11) claims that the whole seeing of colors and their relations is a matter of education; it is absolutely lacking in children to whom Orange is as much a primary color as is red. It is hard to tell whether a child sees purple as a combination of red and blue, or as a simple color, but he will probably believe whatever he has been taught about its complexity.

Preyer (7) was the first investigator to attempt any systematic experiments upon the color sensations of children. "Die Seele des Kindes," 1881, gives the results of 1486 judgments of color, made by his child and completed in its thirtyfourth month. His was a test of color discrimination and his method involved a knowledge of the names of colors.



Freyer's child showed a tendency to confuse green and blue which consequently appear at the end of the list. Yellow, Freyer's child liked and discriminated best.

Miss Shinn (7) used Freyer's method upon her niece in its second year and found that the child early became unconscious of the difference between blue and red; hence red is tenth on her list. Although yellow is ranked fifth, Miss Shinn is inclined to think it the favorite color of her niece for she early showed a special fondness for daffodils and for a yellow dress (4).

Binet's (7) order of discrimination for children is red, blue, orange, rose, violet, green, yellow and white, while Baldwin's (20) order in his test for children is : blue, red, white, green and brown. Yellow, so readily distinguished by Freyer's child, is by Binet's the least readily recognized. Red and blue, confused by Miss Shinn's niece, give almost no difficulty to Binet's daughter.

Baldwin also has experimented extensively along this line and in discussing the methods used by Binet and Freyer, feels that the colors least recognized in Binet's list are shades whose names are less familiar to children. (7)

In Nagel's (20) experiment on his son of two years and four months, he found that red was at once designated; green was learned with very little practice as were also violet and black. The recognition of gray and blue developed rather more slowly. Nagel places green, violet and red on an equal footing and assigns to blue the lowest place on the list.





Among one thousand children in America, Earl Barnes (2), found like Aars (2) that more boys than girls selected blue, while the girls preferred red more frequently than the boys. He considers that with growing years there is a growing tendency to select red, but children's love of yellow diminishes with age; even between the ages of four and seven, though yellow was still one of the most favored colors: in the boys, it had ceased to be in any degree a favorite color of the girls.

Comparisons of color and gray were made in an investigation by Aars (15) on children from six to seven years old. The first experiment involved a comparison in pairs, of color and gray, resulting in a preference for the color eleven times, the gray five times. The second time there was used a gray paper and the same color with the addition of 20% of gray. The mixture was preferred fifteen times, the gray once. The third time, the saturated color was compared with one containing 20% of gray. The saturated color was preferred thirteen times out of sixteen.

Corpsyré (20) concludes that yellow and red are the two colors most easily recognized by little children and that the child likes soft colors more than strong ones. Young children share the love of savages for yellow. He sometimes prefer it to red. The former is often confused with orange and the preference may be based upon luminosity, a point which would likely be the deciding factor with a child.

Jobsien (4) at Kiel, investigating the color preferences



of a large number of school girls between eight and fourteen , found that while orange was never preferred to any other color, there was a tendency at all ages to prefer yellow to green and usually to violet, but never to red or blue.

Garbini (2) has accomplished much of value in his experimentation with children. With six hundred North Italian children, he came to the conclusion that red is their first color of attraction and recognition. His order is red, green, yellow, orange, blue and violet and he decided that color perceptions and their verbal expression follow parallel paths, with perception coming before expression. Garbini also decided that under the age of three, children may be said to be color blind for they confuse the rosy tints with green and have a special difficulty in distinguishing yellow from orange.

Eldridge Green (9) has also advanced the theory that very young children are color blind, but Marsden (9) by removing the brightness difficulty, proved that the child was not color blind. No doubt much could be accomplished along this line, but at present, there are varying opinions on the subject of color blindness in children.

Among investigators in comparative psychology are Tubbeck, Graber, Jennings, Wilson, House, Barker, Winnech, Verber, the Beckhams, and many others. Numerous tests have been carried on thru the use of colored papers, paintings and films, but in all of these experiments one meets the difficulty that prevails in all of the tests with lower animals- that the experiments are not sufficiently controlled to distinguish reactions to color from reactions to brightness.





Aside from the investigations with savage races, tests have been carried on with varying results in many countries. Stephenson (7) recently examined over one thousand Chinese; finding but one case of color blindness. Conn (13) in Germany, has made a number of tests which show that there is a much greater preference for pure colors than for those mixed with white or black. Geiger and Magnus (14) in 1867, both presented articles on the perception of color as related to a gradual appreciation of the same.

Havelock Ellis (2), having made an extensive study of the color preferences in various lands, states that in China, Burmah, and the lower coast of India, yellow is the sacred and preferred color. In Europe, yellow was always preferred, although it was not as sacred a color as in Asia. Lockhart (11) states that the Eskimos use very little color in their dress, but their interest in color is aroused in the autumn when the brighter tints are seen in the vegetation on their hills.

In our own country, a number of investigators have worked upon the color problem, among whom are Wissler, (4) Major, (4) Jastrow, (1) and Wells (21). In 1910, Wells published a description of the affective characters of the colors of the spectrum. By means of a color chart, hung before his class, and a list of twenty adjectives written upon the blackboard, the affective character of the various colors was determined. The criticism of this method lies in the fact that the experiment is carried on verbally, associating



a color and a certain adjective regardless of affective tone for the color. Wells states that the observers were given the privilege of employing words, not in the list, which might better express their feeling, but this is a privilege which was used but little. However, he reaches this conclusion:

"The most significant fact appearing from the investigation is the possibility of demonstrating that a given sensory stimulus has, for normal sense perceptions and under ordinary conditions, an affective character which remains constant regardless of any subjective attitude of the sensibilities toward that stimulus." Wells does not seem to take into consideration that the association of the color "red" and the word "exciting" may be entirely in the world of "knowledge about", and due to previous educational or social conditions, very likely, is far from being an index of feelings on the part of the individuals. Since the terms have always been closely allied; hence there is a hesitancy on the part of the individual to deviate from this well established custom, even though his own attitude toward red is not one of great excitement.

In his experiment at the Columbia Exposition in 1893, Jastrow (1) found blue to be the favorite of one-fourth of all the 4,500 voters. Next came red as a preference with a group composed of lighter blue, blue violet, red violet, pink and violet, ranking third. With men the favorite color was blue; with women, red. The tendency for these preferences to appear again in the choices of favorite combinations of color was also marked as was the feminine tendency for





choosing the lighter tints.

OBJECTIVE RESULTS.

In the following tables, the numbers from one to twenty-one represent the colors from the tint of red to the shade of purple, respectively. The numbers below, represent for each observer, the number of times out of a possible twenty, that a color was chosen.

For the group results, the total number of the individual preferences for each of the colors was averaged and the charts made on that basis.



CHINESE MEN.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Observer A	5	11	6	9	17	10	16	18	6	5	6	9	18	14	9	0	4	16	15	0	10	
"	B	12	12	7	13	16	17	15	15	7	8	6	18	4	6	1	6	3	8	20	8	8
"	C	12	15	4	8	17	8	13	8	0	10	16	9	14	19	8	7	4	3	6	19	1
"	D	8	12	8	11	18	5	19	19	5	15	14	13	3	11	3	11	2	6	14	9	3
"	E	0	10	4	12	19	5	14	17	2	3	14	10	14	18	13	5	6	4	6	10	4
"	F	5	7	4	5	10	9	17	18	1	12	14	16	12	13	11	3	7	15	14	15	2
"	G	3	14	10	2	12	3	16	19	0	9	12	12	17	20	8	10	12	9	4	18	5
"	H	2	10	3	13	14	6	10	12	0	13	13	9	14	16	6	10	6	10	15	20	8
"	I	5	14	12	7	13	2	7	14	1	18	18	7	8	19	18	6	8	0	6	17	10
"	J	6	4	3	9	9	11	5	3	2	17	13	20	15	9	12	16	15	19	13	3	6
"	K	15	17	8	12	14	7	6	14	0	8	13	6	13	19	16	4	7	1	8	20	2
"	L	19	11	11	11	12	12	2	4	0	6	6	7	8	9	11	15	11	13	2	10	13

CHINESE WOMAN.

Observer M	2	11	4	7	12	6	8	10	0	17	19	12	9	13	5	15	13	18	5	18	4
------------	---	----	---	---	----	---	---	----	---	----	----	----	---	----	---	----	----	----	---	----	---





12 CHINESE MEN ; 1 CHINESE WOMAN.

The highest point for the Chinese group was pure blue, with Orange a close second and yellow third. For no other group is pure orange or yellow nearly so high, thus substantiating the general opinion that the Chinese prefer colors from this portion of the spectrum.

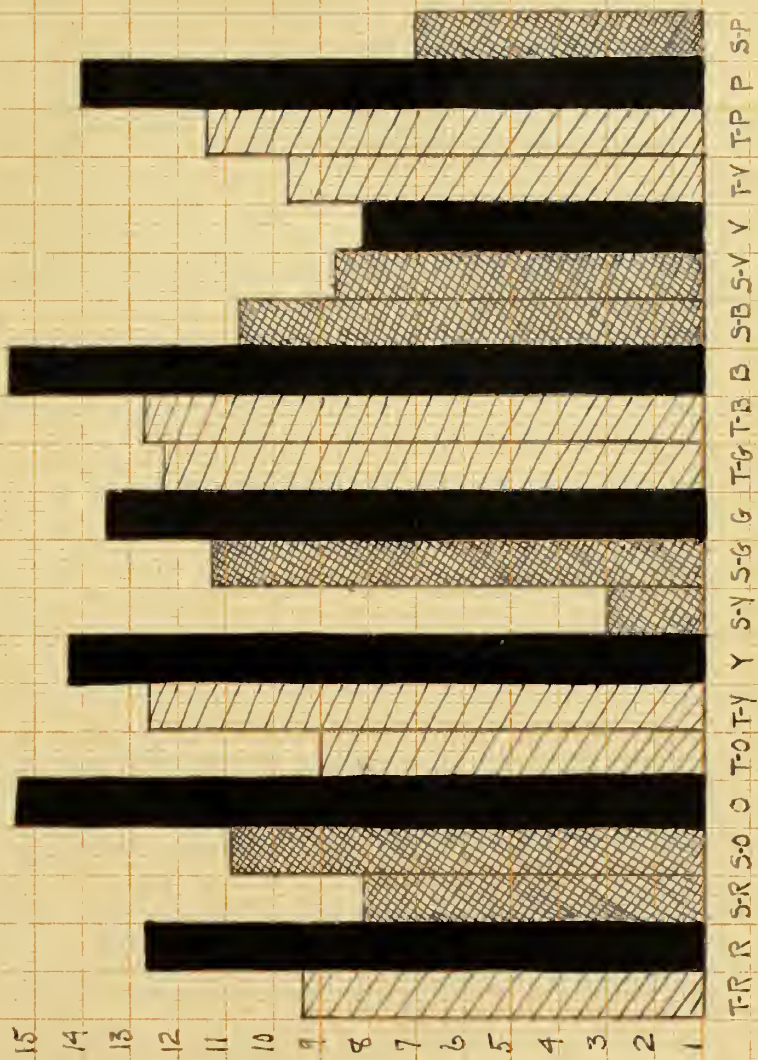
Here were the pure colors, with the exception of violet, are generally preferred, whereas the shades meet with less favor.

Green, so closely allied with yellow, ranks almost as high and was the favorite color of the one Chinese woman observer.

It is interesting to note the low averages which violet and its shade have in relation to their position in the other groups. This is no doubt largely a matter of education which will be explained under introspective results.

The least preferred color of all the group is the shade of yellow; seven being the greatest number of times out of a possible twenty, that it was chosen by any one observer. The dislike of this color seemed to be universal through the Chinese group since six Chinese observers preferred every other color to it.





Chinese Men



JULIAN DATE 1911.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer A	2	17	12	7	8	4	9	3	15	4	10	8	9	10	11	12	10	13	10	14	17
" B	9	14	8	7	17	15	19	12	2	5	10	17	8	16	9	5	0	2	11	17	4
" C	7	6	5	6	11	11	12	15	11	13	12	7	12	9	7	18	8	19	18	1	12
" D	6	1	1	4	11	5	6	7	1	12	9	12	17	18	13	13	14	19	19	8	14
" E	7	19	17	3	5	0	4	12	6	10	11	5	4	12	12	16	13	8	13	20	15
" F	1	17	18	8	6	2	2	9	6	7	11	4	6	14	10	18	12	15	9	19	16
" G	3	2	1	6	14	7	11	15	0	12	15	11	12	7	5	15	17	16	17	15	9





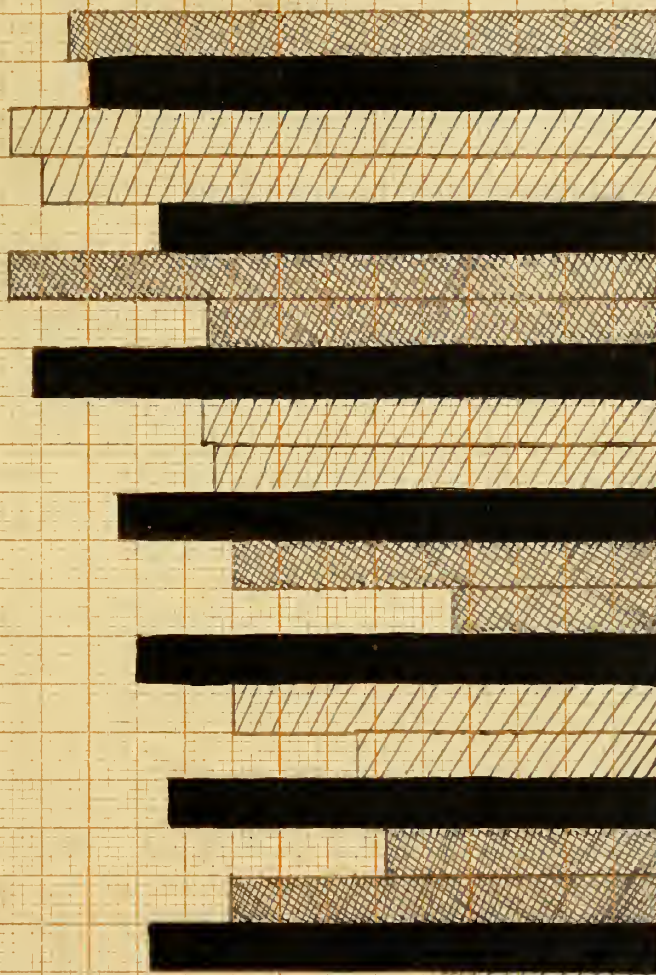
7 JAPANESE 1927.

Very different in many respects from that of the Chinese, is the Japanese chart, for here orange and yellow are much lower, while the shade of violet takes the highest place. Introspections state that dark colors signify that one is of the better class in Japan. The shade of violet also has a prominent place in the religious ceremonies of Japan, the draperies and other ornamentations being of this color. The tint of purple, much used for dress in Japan, ranks second, with pure blue, third.

The shade of yellow is here, as before, the least preferred color although it is not so universally disliked as in the Chinese group. Taken as a whole, the preference of the group is high for blue, violet and purple and low for red, yellow, orange and green.



14  
13  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1



Japanese Men.





AMERICAN N.H.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer	A	8	10	18	7	14	5	1	5	0	11	13	3	7	16	12	13	7	8	14	18	15
"	B	8	20	17	6	9	1	8	11	2	13	17	8	7	17	17	9	8	1	5	19	11
"	C	7	9	8	5	12	10	10	11	1	17	19	15	22	19	16	14	3	1	12	10	3
"	D	11	10	8	5	4	5	4	5	0	16	16	8	18	20	19	16	14	9	11	2	11
"	E	7	20	19	7	9	5	0	4	1	17	12	2	18	15	15	15	12	5	8	18	14
"	F	7	14	5	9	16	11	17	6	5	17	12	14	17	14	2	3	1	12	11	6	
"	G	7	10	12	7	5	4	0	1	2	13	12	10	15	14	16	20	18	17	10	10	12
"	H	10	17	16	14	14	5	8	11	0	12	11	3	8	19	14	9	8	1	5	19	9
"	I	5	14	12	5	11	2	11	14	0	13	7	3	7	18	7	17	13	11	10	20	10
"	J	2	16	11	2	5	1	10	15	2	15	13	5	8	19	15	17	12	8	5	20	8



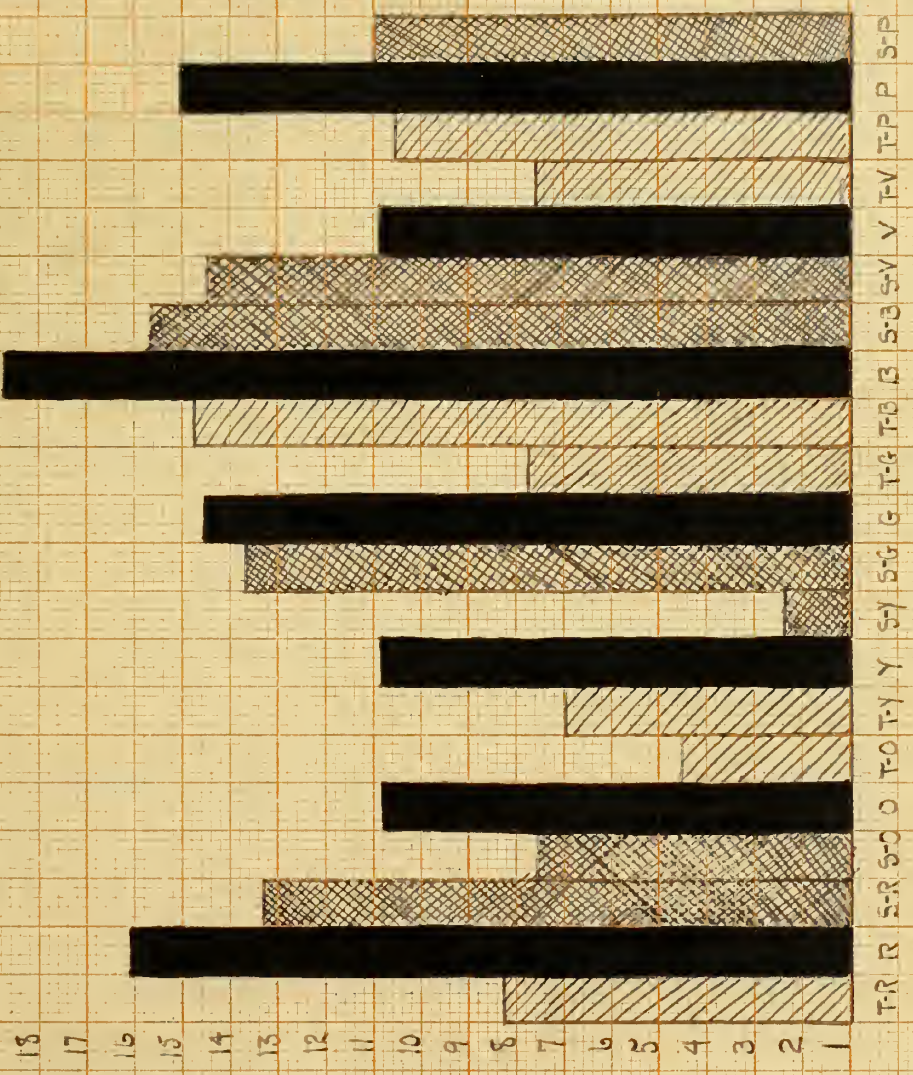
10. AFRICAN MEN.

From the accompanying chart one may see the preferred preference of the African men for blue, with red ranking second, the shade of blue third and purple fourth. With the exception of the tint of blue, if all the tints are low, the orange tint ranking next to the lowest.

The shades are pretty generally preferred, although the lowest place is given to the shade of yellow. The shade of violet ranks very high while pure violet and its tint are low, thus showing that in general, red, green, blue and purple are preferred over orange, yellow and violet.



American Men







AMERICAN WOMEN.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer	A	7	9	11	8	4	5	7	7	12	15	10	11	5	0	3	15	18	19	15	9	18
"	B	1	17	8	3	3	4	3	8	7	17	19	8	13	13	10	14	9	14	8	13	3
"	C	2	6	4	7	10	15	13	13	0	15	17	19	18	17	15	7	9	14	7	7	1
"	D	11	17	18	8	10	4	0	3	1	7	8	1	13	20	16	16	12	5	8	17	12
"	E	4	19	19	5	8	0	7	11	1	6	13	7	13	14	18	11	13	14	12	4	15
"	F	6	9	3	1	1	4	3	11	1	19	15	3	4	4	16	18	17	10	4	9	
"	G	10	14	17	8	7	6	6	6	0	16	18	19	17	16	17	1	3	5	5	8	15
"	H	6	19	18	2	2	4	4	1	2	16	10	10	11	13	15	9	7	18	15	16	11
"	I	3	19	20	11	6	7	15	9	17	6	5	8	9	8	14	13	14	14	3	0	9
"	J	3	19	18	5	1	9	14	10	3	9	12	6	11	9	10	17	17	18	7	0	10
"	K	9	12	12	7	10	14	17	12	8	9	5	10	9	12	13	7	10	11	7	7	9
"	L	15	16	11	4	3	19	5	8	1	5	8	11	16	20	17	5	9	14	7	13	1

Observer L not printed 25 group results.



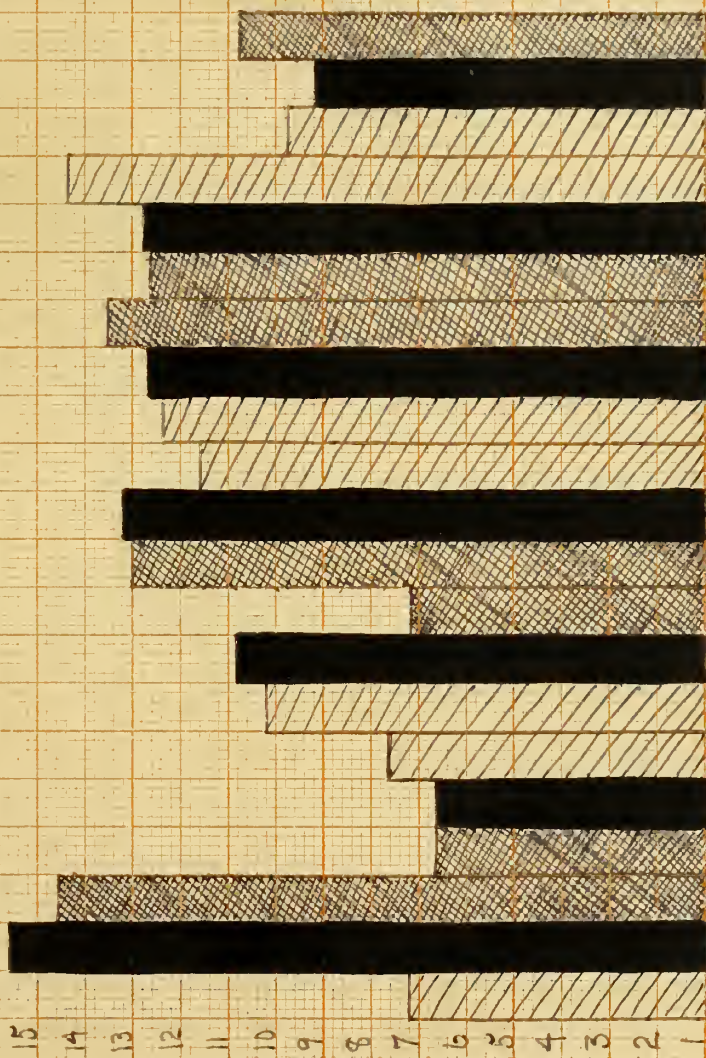
11. AMERICAN WOMEN.

The most noticeable contrast between this group and that of the American men is in the fact that the preferences of the women, except in the case of red, are not nearly so marked as of the men. Red and its shade rank first and a tint of violet third. Pure blue, which was so decidedly preferred by the men, ranks here on a par with violet and its shade, and is below the shade of blue or green and its shade.

The choice for tints is rather strong, as is also the choice for shades. Although the pure colors rank high there is not such a decided preference for them as in the case of the men. From the shade of green thru the tint of violet, the preferences are very nearly of the same rank, the lowest points in the series being with a tint of red, orange and its shade and the tint and the shade of yellow.







American Women.



MAGRO MEM.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer A	6	14	15	7	11	10	17	6	2	7	12	1	17	19	13	10	6	3	2	12	8
"	3	7	3	12	11	17	10	6	3	7	5	10	16	11	19	17	15	14	9	0	1
"	0	1	15	17	12	18	4	7	9	10	12	10	4	15	19	19	9	10	3	1	3
"	0	7	13	12	10	9	5	0	4	5	5	5	1	15	20	19	17	18	15	8	13
"	2	6	10	11	11	8	5	14	12	7	3	0	9	18	17	20	18	15	10	9	17
"	5	4	16	17	5	10	3	6	8	0	14	17	4	12	18	15	16	14	3	5	19
"	1	11	17	16	11	13	4	14	0	7	8	2	15	18	17	12	9	4	9	20	12
"	H	9	12	4	8	14	1	8	15	2	16	18	3	12	17	12	15	10	4	7	18
"	I	12	15	14	10	8	6	0	1	5	5	2	12	12	17	17	19	13	7	15	17
"	J	6	7	10	10	4	2	0	2	14	12	7	4	8	19	15	19	19	15	8	9



10 NEGRO RACE.

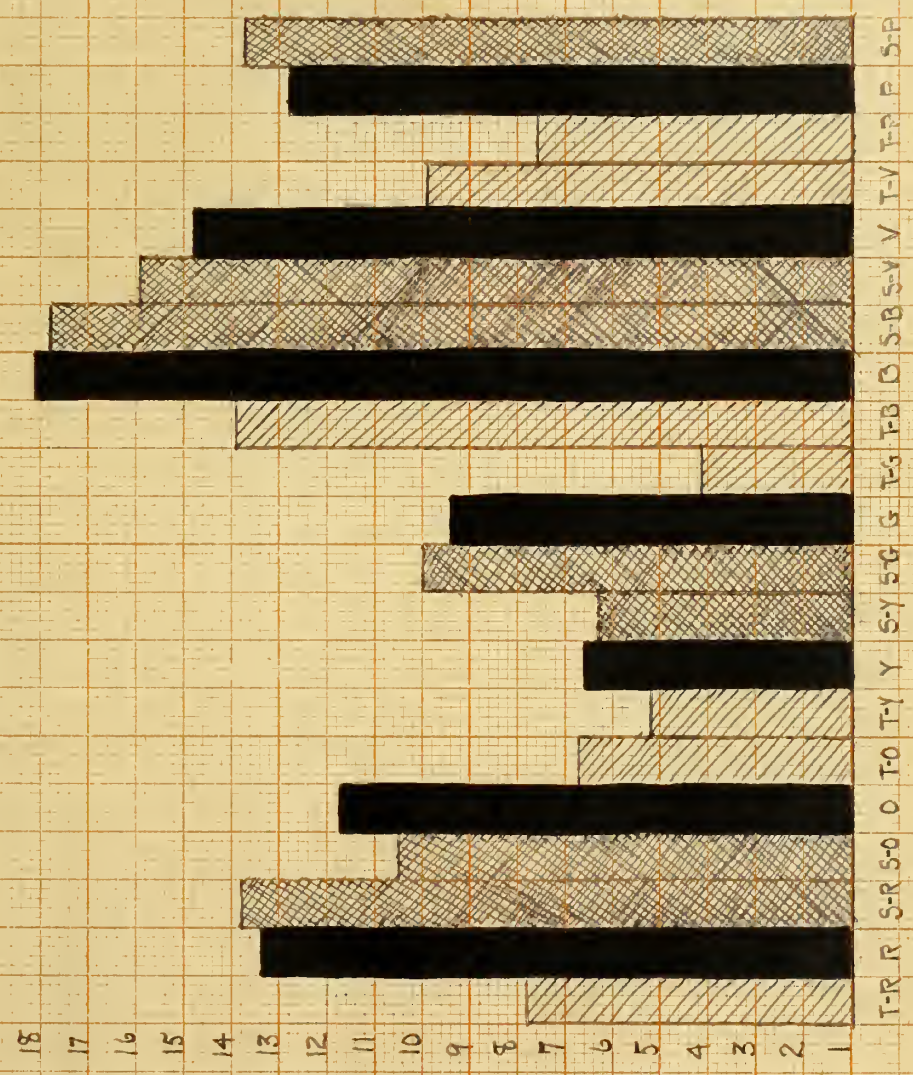
Probably the most interesting group studied was the negro, for here the preferences are very decided. The negro men were almost universal in stating their preferences for the darker colors and this is well borne out in the chart by the display of preferences for the pure colors or for their shades toward either end of the spectrum. The shades of yellow and of green do not compare in darkness to the shades of violet or of purple; hence they do not come so generally under this preference.

The tints, with the exception of blue and violet, are the least preferred in this group; the shade of yellow, so easily the lowest with the Chinese and Japanese, here ranking higher than either the tints of yellow or green and almost on a par with pure yellow and the tint of orange.





# Negro Men.





MACRO T.C. 11.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer	A	1	8	9		4	15	3	8	8	14	12	18	13	3	7	12	11	18	17	1	1.
"	B	3	11	18	2	2	3	5	7	4	8	10	16	20	17	17	14	13	17	9	2	12
"	C	3	1	9	5	3	6	7	7	5	16	12	17	20	18	15	10	9	17	9	4	6
"	D	7	16	4	8	13	18	12	10	0	9	14	13	17	10	11	8	2	15	12	5	5
"	E	5	5	8	7	3	14	11	9	7	11	5	18	14	8	7	15	13	19	15	3	13

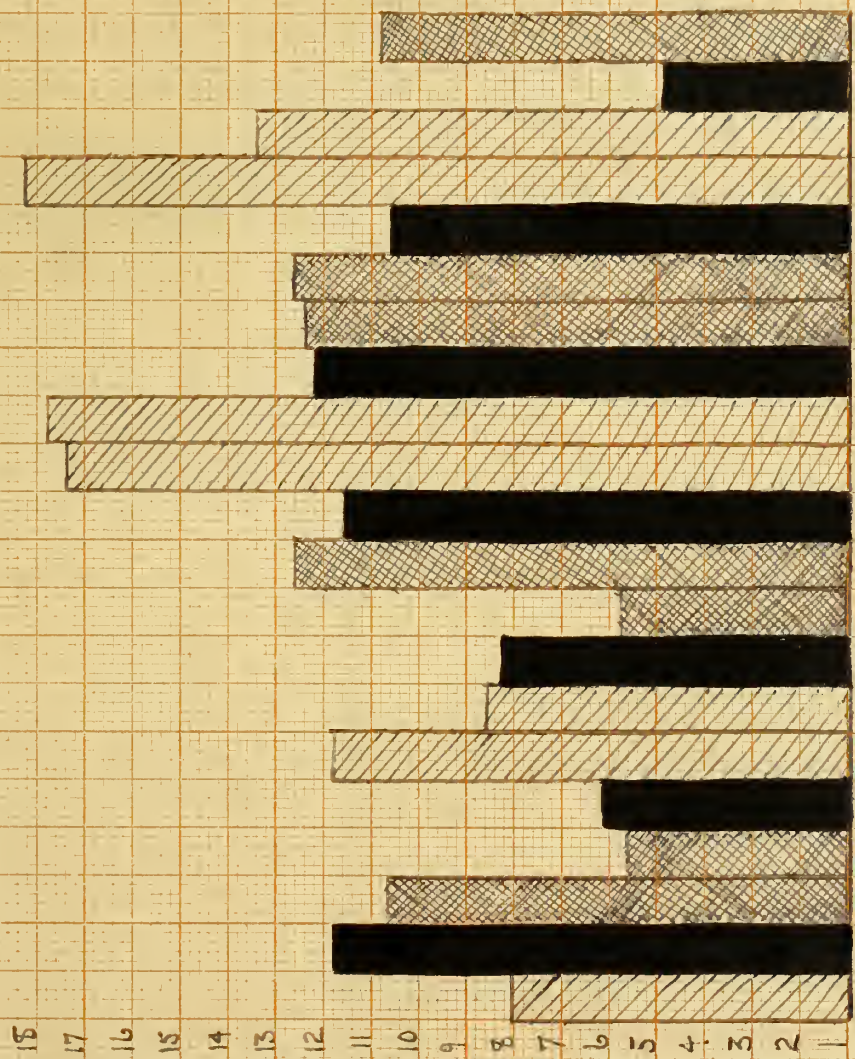




NEGRO WOMEN.

The most interesting fact about this group is that the four colors of highest place in the chart are all tints. The next three in rank are shades, thus showing that as far as this group is concerned, pure colors are not the favorites of the Negro Women. Red, green, blue and violet rank fairly high, but orange, yellow and purple are low. The four colors of lowest rank are the shade of orange, orange, the shade of yellow and purple, the last named being lowest.





Negro Women.



ITALIAN WOMEN.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer A	8	13	8	13	8	11	12	11	9	12	8	9	13	11	4	16	8	10	12	11	9
" B	13	11	10	12	11	8	1	2	1	7	10	9	11	16	11	14	12	8	14	16	13
" C	16	15	10	5	17	10	1	2	0	11	13	7	14	16	12	7	7	8	16	19	8
" D	10	7	10	11	10	9	10	8	10	11	10	11	10	11	10	10	10	10	10	10	10
" E	8	8	7	11	12	10	13	9	11	12	8	9	8	11	7	11	13	9	12	8	12
" F	9	10	9	13	10	11	11	9	9	12	7	10	11	10	8	9	11	8	10	11	11





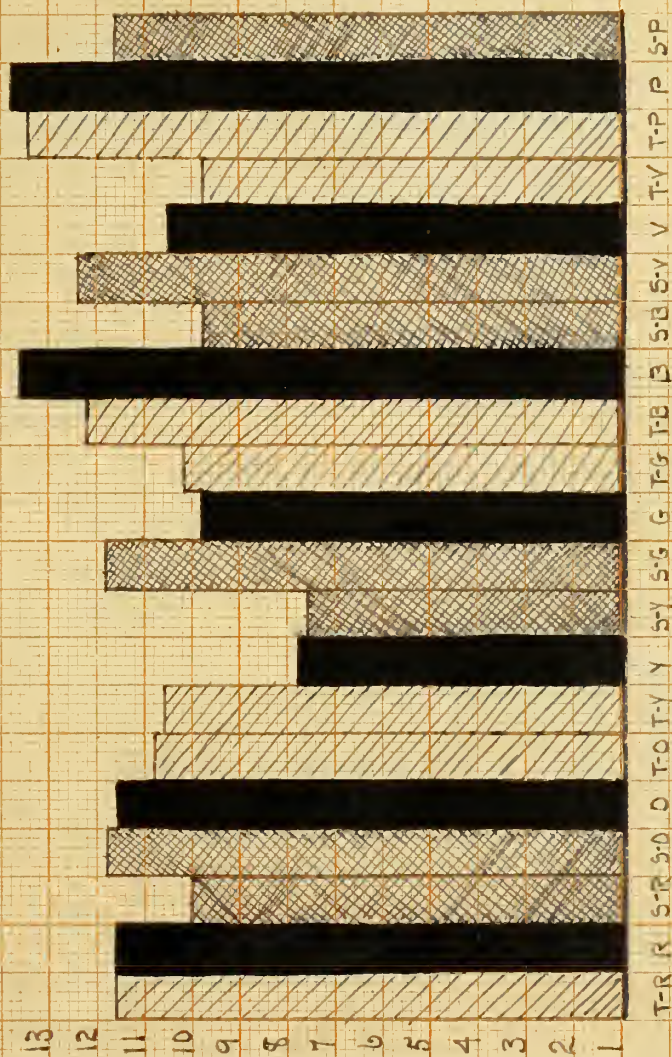
C ITALIAN WOMEN.

The most difficult group from which to obtain definite and satisfactory results was the Italian. In the preferences of three of the observers almost no variation was noted, observer F stating that she cared as much for one color as for another. Whether this lack of decided preference was due in these three cases to a color weakness or to a general lack of mental ability necessary to color discrimination is not known, but considering the environmental influences, it probably was the latter. The other observers of this group were very decided in their preferences and consequently proved the deciding factors in the group average.

The highest point is purple with five seconds and a tint of purple third. These three colors are the only real preferences of the group for the next in rank, eight in number and composed of pure colors, shades and tints, are of just about the same height. The lowest points are yellow and a shade of yellow.



# Italian Women.







SCHOOL BOYL.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Observer A	9	9	7	5	8	9	10	6	3	8	9	7	13	16	15	16	12	10	12	10	10	
"	5	9	14	13	8	12	8	10	10	10	10	5	11	15	7	7	4	9	14	19	7	
"	0	0	7	3	8	6	3	5	5	2	13	14	10	15	16	15	15	13	15	14	18	15
"	1	8	13	12	9	8	11	10	12	15	6	4	7	9	7	12	16	10	8	13	11	9
"	2	9	13	6	11	8	9	11	12	4	11	11	5	14	18	12	9	5	6	14	18	4

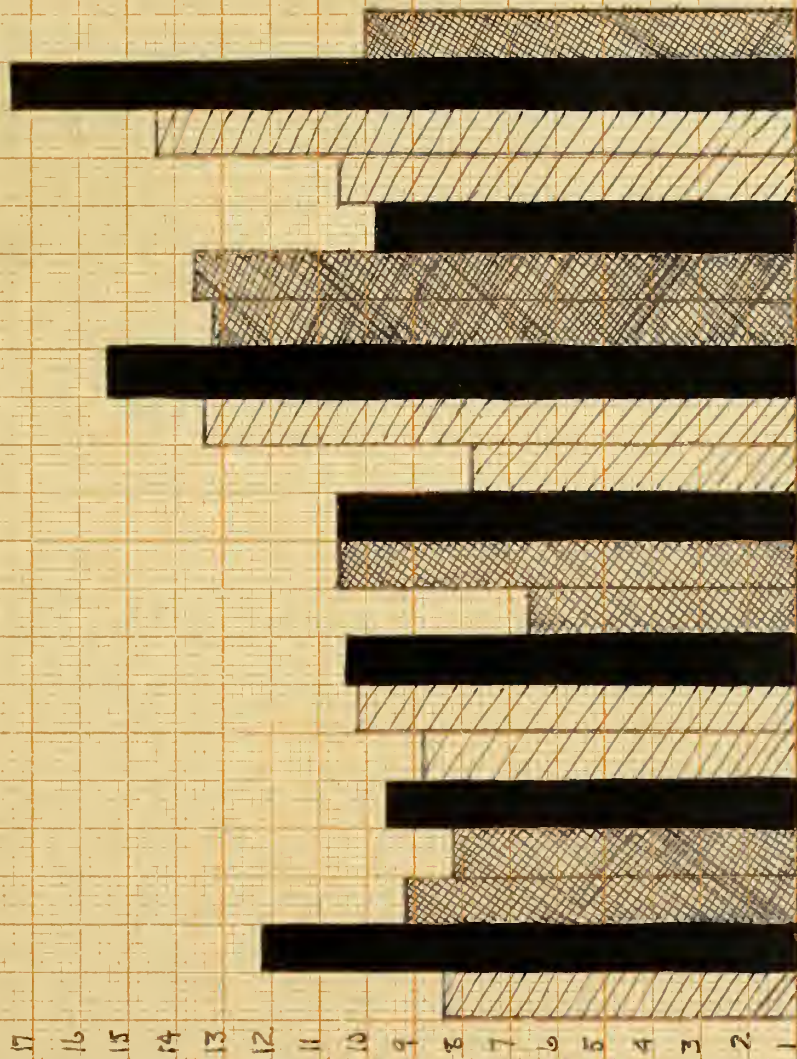


SCHOOL BOYS.

Purple and blue rank first with the boys, aged six years, while the tint of purple and the shade of violet come next. With the exception of pure red, the reds, yellow, orange and green are low, the highest points being with the violet end of the spectrum. Although these observers were never very certain when asked concerning their favorite colors, they usually said that they preferred light colors. This is borne out in the positions of the tint of blue and the tint of purple in the chart.

Here as in many of the other groups, the shade of yellow is the lowest.





School Boys.

T-R R S-R S-O O T-O T-Y Y S-Y S-G G T-O T-D D S-B S-V V T-V F-P P S-P





SCHOOL GILLS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Observer A	8	12	9	11	9	10	12	10	9	10	7	6	12	11	9	10	10	9	11	12	13	
"	5	7	8	4	11	12	15	13	8	11	14	9	10	10	11	8	9	10	8	14	15	5
"	0	7	8	6	12	8	6	9	8	9	12	11	12	12	14	7	10	11	10	12	12	13
"	5	7	8	4	9	11	8	6	11	7	12	9	9	7	14	0	14	13	14	14	20	6
"	5	13	10	8	13	11	8	9	7	10	9	8	7	11	9	8	11	5	5	16	18	16



5 SEMOOL GIRLS.

With the girls, aged six, as with the boys, the highest place is given to purple. Here the remainder of the colors are of more equal rank, the lack of definite color preferences on the part of some of the observers, no doubt being responsible for the evenness of the curve.

It is interesting to note that in this group, with the exception of purple, the pure colors do not stand high, the places above them being taken by both the tints and the shades. The lowest places are given to the shade of red and to the shade of blue.







School Girls.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Observer A	100	103	105	108	110	112	115	118	120	122	125	128	130	132	135	138	140	142	145	148	150
"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
"	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Observer A--100 to 150.

" " " 1 to 21.

" " " 0 to 20.

Results not recorded.



SUMMARY OF GROUPS OF PERSONS.

	1	2	3	4	5
CHINESE MEN- BLUE		ORANGE	YELLOW	PURPLE	GREEN
JAPANESE MEN- VIOLET		SHADE OF PURPLE	SHADE OF BLUE	SHADE OF VIOLET	SHADE OF PURPLE
ARABIAN MEN- BLUE		RED	SHADE OF BLUE	PURPLE	TINT OF BLUE
AMERICAN WOMEN- RED		SHADE OF RED	TINT OF VIOLET	SHADE OF BLUE	SHADE OF GREEN
NEGRO MEN- BLUE		SHADE OF BLUE	SHADE OF VIOLET	VIOLET	SHADE OF RED
NEGRO WOMEN- VIOLET		TINT OF BLUE	TINT OF GREEN	TINT OF PURPLE	SHADE OF VIOLET
ITALIAN WOMEN- PURPLE		BLUE	TINT OF PURPLE	SHADE OF VIOLET	TINT OF BLUE
SCHOOL BOYS- PURPLE		BLUE	TINT OF PURPLE	SHADE OF VIOLET	TINT OF BLUE
SCHOOL GIRLS- PURPLE		TINT OF PURPLE	SHADE OF GREEN	SHADE OF ORANGE	SHADE OF VIOLET





Summarizing the first five preferences for all of the groups and adding them together regardless of the order of choice, the following list results:

B-6		S-B-4		V-1	
S-V-6		T-V-3		C-1	
P-5		P---1		W-1	
T-P-5		C-1-1		S-C-1	
T-B-4		S--1		S-B-1	
				T-C-1	

The list above, represents the preferences of all groups, and gives the violet tone of the secondary, and the red of the tertiary, and the yellow of the quaternary. If these seven colors, the five pure colors, blue and purple; three are tints; and two are shades. From the ten there are five pure colors, with four shades and one tint. The list named is the tint of green, found in the choice of the group of Negro women, but not prominent in the choice of any other group. Blue is probably the favorite color of men with red for women, although, according to this summary, blue is no doubt nearer a universally favorite color, than any other.



SUMMARY OF COLORS PLASTED THEREON.

CHINESE MEN-	Shade of YELLOW	Shade of PURPLE	Shade of VIOLET	Shade of RED	Shade of VIOLET
					
JAPANESE MEN-YELLOW	Shade of RED	Tint of ORANGE	Shade of ORANGE	Tint of ORANGE	Shade of RED
					
AMERICAN MEN-YELLOW	Shade of ORANGE	Tint of ORANGE	Tint of YELLOW	Shade of ORANGE	Tint of VIOLET
					
AMERICAN WOMEN-ORANGE	Shade of ORANGE	Shade of ORANGE	Shade of YELLOW	Tint of RED	Tint of ORANGE
					
NEGRO MEN-	Tint of GREEN	Tint of YELLOW	Shade of YELLOW	Shade of VIOLET	Shade of VIOLET
					
NEGRO WOMEN-	PURPLE	Shade of ORANGE	Shade of YELLOW	ORANGE	Tint of RED
					
ITALIAN WOMEN-	Shade of YELLOW	YELLOW	GREEN	Shade of BLUE	Tint of VIOLET
					
SCHOOL BOYS-	Shade of YELLOW	Tint of GREEN	Shade of ORANGE	Tint of RED	Tint of ORANGE
					
SCHOOL GIRLS-	Shade of RED	Shade of BLUE	Tint of RED	RED	YELLOW
					





In the summary of colors just referred, the following list shows the number of times in all of the groups that the colors came within one of the lowest five points:

S-Y-8 	S-R-5 	T-G-2 	V-1 	P-1 
T-R-5 	T-Y-2 	Y---2 	S-V-1 	
S-O-5 	T-I-2 	S-D-2 	P-1 	
T-O-5 	C---2 	S-I-1 	C-1 	

Out of nine groups of observers the shade of yellow is one of the least preferred by every group excepting the Schoolgirl, and is the least pleasing color to all of the adult observers. The pure colors, as a rule, are not disliked, but four groups found both orange and yellow unattractive, the American and Negro women decidedly against orange, and the Negro men and Italian women against yellow.

Just as the violet end of the spectrum was shown to be most generally preferred, so here the red end of the spectrum is seen to be least preferred, for in the first eleven colors of the list of sixteen only one preference is recorded for purple or violet and that by two groups which least preferred the tint of violet.

#### INTROJECTIVE RESULTS.

Aside from the results of reactions in different groups of observers there was noticeable a difference as to type which might be classified as foreign and American. This difference was manifested by the presence of associations in the case of foreigners and their almost total absence in the case of American observers. As has been previously stated, associations were to be eliminated whenever possible and this was done with but



few exceptions by these same colors are in America (Italian and Negro groups were increased). Associations, however, were very plentiful with the Chinese, Japanese and with the Philippine, Hindu and Egyptian. This may be accounted for by the fact that the last named group of people are in a strange environment from which traditions of home are cut off.

The colors have an adequate cue to the recall of objects to them most familiar, many of which have a close relation not only to the life of the individual but to the nation, as well.

Love for the Japanese in America, immediately suggests the wisteria, while all the shades of violet remind him of the popular colors for women's dress in Japan. The queen's flag is the color of the wisteria, her crown, in combination with green.

The Chinese also showed many associations, the dress of women being prominent in many cases. One observer told of Confucius decreeing against the use of colors No. 16 and 17, the black and pure color of violet. "No Chinese would knowingly choose them", he said, "because these colors are very low in the eyes of the Chinese people. We always think of the universal love of the Chinese for yellow, their universal color, but observer J states that the Chinese like red, their universal love for yellow being only a love for their flag. Whether the yellow was chosen for the flag because of its own attractive tone or whether the color is preferred because it has been the color of their flag is a problem difficult to decide. Either blue, black or color of vermilion in China, was seldom chosen. Notwithstanding associations, observers state that so far as possible they rendered judgments of preference, and endeavored



to neglect the associations.

Red, to the American, was a representation of his flag, and his favorite address, while blue was associated with certain outer garments. With this observer the love for these objects is strong, since the costume is a national one and the color associations are marked by this feeling tone.

The one Hindu observer was quick in his reaction. In several instances stated that his choice was not unconsciously or that this rather than from affective tone of the color itself. The association of color of India was brought to his mind by the light yellow-her dress- and by the tints of green and blue-her veil. A combination of pure green and a shade of blue reminded him of the green of nature and the blue of the ocean.

The Englishman thought of the tint of purple as the color of his native flower- the purple rose.

Thus it may be said that the foreign group, in general, was much more likely to judge in terms of relative associations than was the American group, for with the last named, associations were very rare. They probably are present but under the circumstances, are not nearly so prominent as in the case of the foreigners, and the attention, therefore, can be more easily focussed upon the color.

The most prominent association was with Observer D who thought of light yellow in terms of nicotine poisoning. One can easily see the connection and yet the association had become so thoroughly fixed that it persisted throughout the experiment. Observer B thought of purple as his fraternity color. Observer F stated that flowers of the shade of violet and the tint of





purple are liked, but not the colored papers in the experiment.

Although no associations were given by the women of the American group (Negroes and Italians included) there is no doubt a tendency for many women to associate colors with wearing apparel. Not always in the definite article envisaged, but the habit of associating colors with reference to coloring dress undoubtedly has a considerable influence upon the reaction of women.

However, turning the two groups as contrasted by the associations manifested, the foreign group, from retrospection, the statements offered, was found to be much richer in associations than the American group.

Definite color preferences were not sought from school children so much as a study of the methods and ideas necessary for experimentation with observers of this age. For any of the subjects of the other groups, with the exception of the Italians, the regular routine of the experiment was sufficient to give them the most accurate ideas of which observers are capable. Some of the children, however, chose their answer, the first color which came to mind as their preference and it was noted by the experimenter the order of presentation was changed or questions were asked in an attempt to discover the true preference. It seemed very difficult in any of the experiments with children to impress upon them the meaning of preference and judging from the answers given this concept was not always successfully developed. When one remembers the large number of experiments upon children of an early age, he is not so greatly surprised at the ambiguity and inconsistency



of the results. To say the least, the combinations and colors were multiple controlled even more rigidly than the results had been included in the instruction by verbal concepts, of course to the subjects of this age, may be avoided.

Throughout the entire experiment many observations, aside from inspections on the part of the observers, were recorded from the method and colors employed. From the nature of the experiment each color was compared with every other and a judgment was necessary in each case. With some observers, this was difficult when neither color of a pair was preferred and the judgment was readily changed from preference to less distasteful. The combination of colors presented, however, had a far greater significance than might at first be imagined, one color to express the preference of another that the latter was thought by some observers to be an entirely different color from the one of previous combination.

In just the opposite manner to the judgments concerning the distasteful combinations were the judgments relating to those of equal preference. Here it was difficult to state which color was preferred, many observers stating that there was no choice. This was more often true with combinations of tints than with any others, showing that an equal preference was rarely expressed except in the case of groups of equal brightness. The observer ever hesitated between a tint of green and a shade of violet, for instance, but he usually chose more frequently tints or shades and hence could receive without hesitation. In the combination just mentioned, however, the shade could usually be chosen because of its depth of color. In all





experiment. With children, there (2) some more than 1000 trials, was attracted only to a minor degree by similarity, but to a large extent by saturation.

The attitude of the observers toward some of the colors was interesting to note, since previous training and fixed ideas had to be met and overcome. One Chinese observer continually associated the colors toward the early part of the experiment but this association was later entirely eliminated. An American observer had never cared for yellow and consequently did not choose it during the first of the test, but he soon realized that it was not a real dislike for the color that was manifested and as the experiment progressed, yellow became very desirable and was often chosen.

Sometimes a color would be agreeable in effect but could not be liked as a color; this was probably more true of the yellow and orange than of any others. These two colors are both clear and would naturally have an agreeable effect over the darker shades of blue or violet, yet the observer must not care at all for the colors in themselves.

The effect of a previous combination was also rather varied not only in the duration of after-images to the new combination but in regard to the memory image and the judgment of the colors just preceding. Although each color chosen was not supposed to enter into the following judgment, in an instant, observers would sometimes feel that a certain color was chosen once it must of course be chosen in the next combination.

One of the most interesting results of the test was in the display of the peak of color preference on the part of many



observers. The nearly white often ml. one was numbered 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. In the non-colored series the colors were numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. and in no group except the Itallian was their colors correctly named. The names for the violets and purples were constantly confused by observers and many of the times were called by the wrong color names. This may be the real difficulty which is the strongest to which name by experimenters that the red end of the spectrum is known and perceived. First, many of the savage tribes having names for but two or three colors.

There was a decided hesitancy on the part of subjects in naming the colors. Sometimes, the subjects, especially, called orange, brown, black, blue, violet, pink; purple, or orange violet red. The relation of a tint to a name to the pure color was also a point of much interest to many operators, some of them having never heard of the classification before.

#### CRITICISM AND CONCLUSION.

Although the results reported are interesting for the groups represented, the report as a whole must be taken only as a preliminary study. It is not a complete and exhaustive study of people and people are different.

There has been an excessive tendency to generalize the findings of the experiment to all nearly all of the population. It proved successful in some cases, but not in others. It is a question of the degree of the difference in the method for finding of direction is no use, but of the necessary to keep a stimulus for some other or some other reaction. The results of all observations. Probably a larger number of colors would serve better in obtaining prompt and definite judgments but at the best



it is difficult to make strictly objective judgments as to how much of the subjective tone of the color, namely, of the affective tone of the associated idea. To avoid the possibility of the presence of either color weakness or color blindness, the Youngren wool test should be carried on in connection with the main experiment.

From the present results, we may conclude the following:

1. Pure colors, orange, yellow, and blue appeal to the Chinese, while the shade of yellow is most preferred.
2. The Japanese are not so decided in their preferences as some of the groups, the shades of pink, violet, and purple being well liked.
3. American men prefer blue, while American women prefer red. Both the Chinese, as well as pure colors, seem to be liked.
4. Negro men and women, as well as Chinese, are indifferent to the color, although they prefer red and orange.
5. Negro men and women like to more colors but do not care at all for orange, yellow and purple.
6. Color discrimination is more difficult for Italian women, at least. For the white group is concerned, there are many others. These preferences, as shown, are for the violet end of the spectrum.
7. Controlled relations are not necessary for group children than for any other subjects. The purpose of the experiment is the simple explanation of the problem, intended to arouse the interest and cooperation of the child.





8. Pure colors are not generally selected, blue being first, with some of violet second and orange third; thus the violet end of the spectrum is most favored.

9. The range of yellow is the most preferred by all groups.

10. Intersections show that domestic groups are best represented with foreigners, in America, than with Europeans.

11. Combinations of color, previous associations, memory and after-images greatly affect color judgments.



BIBLIOGRAPHY.

1. The Popular Aesthetics of Color. Popular Science Mo. 50: 351.
2. The Psychology of Red. H. Ellis. Popular Science 57: 565.
3. The Sense of Color. Popular Science 55: 78.
4. The Psychology of Yellow. H. Ellis. Popular Science 66: 456.
5. An Attempted Experiment in Aesthetics. First Series. Psy. Review 7: 580.
6. The Simplicity of Color Tones. American Journal of Psy. 14: 92.
7. Prof. Bismarck's Method of Studying the Color Perception of Children. American Journal of Psy. 8: 580.
8. Comparisons of Colors. Psy. Review 3: 80.
9. Early Color Sense. Psy. Review 10: 87-99.
10. The Color Vision of the Blind. Psy. Review 4: 390.
11. Color Introduction on the Part of the Blind. Psy. Review 6: 386.
12. Color in Quantity and Time. Esthetic 11: 696.
13. Comparing the Agreements of Colors in Perception of Colors: A Paper. Zeit. für Psychologie und Physiologie der Sinnesorgane. 1 1906--Page 433.
14. The Development of the Color Sense. Contributions 37: 515.
15. British Journal of Psychology. Volume 4.
16. Reports of the Carnegie Anthropological Laboratory





to *Science*. *Stimulus*. Vol. 1. No. 1.

17. Yerkes. - "The Imaginal Image."

18. The Psychologist - "The Imaginal Image." *Psychology*.

19. Titchener. "Students' Manual, Qualitative."

20. Color Perception in the Dog, Cat, and Squirrel.

C. C. Colvill-C. C. Burroughs. *Psychol. Monographs*. Vol. 11-Nov. 1901.

21. A Description of the Affective Character of the Colors of the Spectrum. M. A. Wells. *Psych. Bulletin*. Vol. 7-pp. 181-195.











UNIVERSITY OF ILLINOIS-URBANA



3 0112 079094568